



Incidence of Ocular Hypertension After Intravitreal Injection of 2 mg Triamcinolone Acetonide (IVT)

Jake Goodman, BS; Maitri Pancholy, BS; Philip Storey, MD, MPH; Anthony Obeid, MD; Durga Borkar, MD; Carl D. Regillo, MD; Daniel Su, MD
Wills Eye Institute Retina Department, Philadelphia, PA

Introduction

- Intravitreal Triamcinolone Acetonide (IVT) is a commonly used medication for a wide range of retinal pathology, including choroidal neovascularization, diabetes, uveitis, and retinal vascular disease.
- Elevated intraocular pressure (IOP), also known as ocular hypertension (OHT), is a known complication of intravitreal steroid use.
- A commonly used formulation of intravitreal steroid is 4mg IVT which carries a 40-50% rate of OHT¹.
- Few studies have reported the incidence of elevated IOP following 2mg IVT.

Purpose

- To report the incidence of OHT following injection of 2mg IVT

Methods

- A retrospective study was conducted on the incidence of OHT after receiving 2mg IVT at a single institution between 3/1/2012 and 3/1/2017.
- Ocular hypertension was defined as an intraocular pressure (IOP) over 24 mmHg at any follow-up visit after IVT and was measured with a Tono-Pen XL.
- Baseline IOP was calculated as the mean of the 3 most recent IOP measurements prior to first IVT injection.
- In order to isolate the effect of 2mg IVT, patients receiving topical, periocular or intravitreal steroid other than 2mg IVT were excluded.
- Patients with less than 3 month follow-up after first IVT were excluded.
- Chart Review was used to collect demographic and outcome variables.

Results

Patient Characteristics

Table 1: Eyes with ocular hypertension following intravitreal injection of 2mg triamcinolone

| Patient | Baseline IOP (mmHg) | History of glaucoma | Number of injections prior to OHT | Time of OHT after IVT (Months) | Peak IOP (mmHg) | Treatment |
|---------|---------------------|---------------------|-----------------------------------|--------------------------------|-----------------|--|
| 1 | 12 | No | 2 | 1.8 | 28 | Brimonidine |
| 2 | 21 | No | 1 | 0.8 | 38 | Brimonidine, Timolol, Dorzolamide |
| 3 | 12 | No | 1 | 3.3 | 25 | Observation |
| 4 | 16 | No | 3 | 1.4 | 32 | Brimonidine, Timolol |
| 5 | 20 | No | 1 | 2.6 | 29 | Brimonidine |
| 6 | 14 | No | 1 | 1.7 | 31 | Observation |
| 7 | 22 | No | 3 | 1.9 | 29 | Observation |
| 8 | 12 | No | 5 | 1.9 | 26 | Timolol, Dorzolamide, Bimatoprost |
| 9 | 15 | No | 9 | 4.2 | 31 | Timolol, Dorzolamide |
| 10 | 10 | No | 3 | 3.3 | 28 | Brimonidine |
| 11 | 20 | Yes | 1 | 1.0 | 28 | Timolol, Dorzolamide |
| 12 | 17 | Yes | 1 | 0.3 | 29 | Timolol, Brimonidine (Brinzolamide at baseline) |
| 13 | 9 | Yes | 1 | 1.0 | 26 | Observation (Timolol, Dorzolamide at baseline) |
| 14 | 15 | Yes | 2 | 1.8 | 26 | Observation (Timolol, Dorzolamide, Tafluprost at baseline) |

IOP=intraocular pressure; OHT=ocular hypertension; IVT=intravitreal triamcinolone

Outcomes

| | Developed OHT | Developed OHT after just 1 injection | IOP rise ≥ 10 mmHg above baseline |
|-------------------------|---------------|--------------------------------------|-----------------------------------|
| 106 eyes (100 patients) | 14 (13.2%) | 7 (6.6%) | 11 (10.4%) |

Conclusion

- In our study of over 100 eyes receiving 2mg IVT, a total of 14 eyes (13.2%) in 14 patients developed OHT.
- All patients who developed OHT were adequately controlled with topical drops and no eyes required surgical intervention.
- Incidence of OHT following 2mg IVT compares favorably to other select steroid agents and doses, although additional research is needed to fully assess OHT rates between steroid agents.

Works Cited

- Smithen LM, Ober MD, Maranan L et al. Intravitreal triamcinolone acetonide and intraocular pressure. *AM J Ophthalmology* 2004; 138:740-743

Contact: Jake Goodman, BS jxg265@jeferson.edu